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09/874,666	06/05/2001	Suresh Ramalingam	42390P7045D	6757

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EXAMINER

GRAYBILL, DAVID E

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/874,666
Filing Date: June 05, 2001
Appellant(s): RAMALINGAM ET AL.

MAILED
MAY 04 2005
GROUP 2800

Thinh V. Nguyen
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1-11-5 appealing from the Office action mailed 7-6-4.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

No amendment after final has been filed.

To further clarify, the reply filed on 10-5-4 contains no amendments. Also, the Office action filed on 7-6-4 is a non-final Office action. Therefore, the reply filed on 10-5-4 is a reply filed after

non-final amendment, and the amendment filed on 10-6-4 is an amendment after non-final rejection. It is further noted that, although the "Office Action Summary," in the Office action filed on 7-6-4 incorrectly indicates that the action is final, the action was not made final, and it was correctly entered in the record as non-final. Examiner Graybill explained to Mr. Nguyen in an informal, not of record telephone conversation that, because the Office Action Summary is a summary of the Office action, it is the Office Action Summary, and not the Office action, that is incorrect. Mr. Nguyen indicated he would proceed with the Notice of Appeal.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

Claims 7, 8, 10-14 and 31-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ameen (0340492) in combination with appellant's admitted prior art;

Claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Ameen and appellant's admitted prior art as applied to claim 8, and further in combination with Desai (6166434) and Lewis (6020579).

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

Claims 7-14 and 31-35 under 35 U.S.C. §112, first paragraph;

Claims 7-14 and 31-35 under 35 U.S.C. §112, second paragraph;

Claims 7, 8, 10-14 and 31-35 under 35 U.S.C. §102(b) as being anticipated by Ameen (0340492); and,

Claims 7, 8, 10-14 and 31-35 under 35 U.S.C. §103(a) as being unpatentable over Ameen (0340492).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

0340492	AMEEN	8-1989
6,166,434	DESAI	12-2000
6,020,579	LEWIS	2-1995

Appellant's admitted prior art in the application specification at page 8, line 19 to page 9, line 2, and the response filed 5-23-02, page 5, second full paragraph including "Appendix A," two pages.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 7, 8, 9-14 and 31-35 stand rejected over the combination of Ameen (0340492) and appellant's admitted prior art.

At column, 8, line 6 to column 16, line 33; column 16, lines 50-54; and column 17, lines 28-31, Ameen discloses the following:

A process for underfilling an integrated circuit that is mounted to a substrate, comprising: dispensing a first material ("undercoat" in space 41) to form an underfill which becomes attached to the integrated circuit 4 and the substrate 12; and, dispensing a second

material 44 to form a circumferential fillet, the second material being different than the first material and becoming attached to the integrated circuit and the substrate, wherein the first material flows between the integrated circuit and the substrate, wherein the second material is dispensed in a pattern which surrounds the first material.

A process for underfilling an integrated circuit that is mounted to a substrate comprising: heating the substrate 12 before a first material is dispensed; dispensing the first material ("undercoat" in space 41) to form an underfill, the first material becoming attached to the integrated circuit 4 and the substrate; and, dispensing a second material 44 to form a circumferential fillet, the second material being different than the first material and becoming attached to the integrated circuit and the substrate; heating the first material to a gel state; wherein the substrate is heated to a temperature "160C" that is greater than a temperature "80C" for heating said first material to said gel state; and mounting the integrated circuit to the substrate with a solder bump 28 before the first material is dispensed.

A process for underfilling an integrated circuit that is mounted to a substrate comprising: heating the substrate 12 before a first material is dispensed; dispensing the first material ("undercoat" in space 41) for form an underfill, the first material becoming attached to the integrated circuit 4 and the substrate; and, dispensing a second

material 44 only around a periphery of the integrated circuit for form a circumferential fillet, the second material being different than the first material and becoming attached to the integrated circuit and the substrate; heating the first material to a gel state; wherein the substrate is heated to a temperature that is greater than a temperature for heating the first material to a gel state; wherein the first material is heated to a temperature ranging between 120 degrees Celsius to 145 degrees Celsius; wherein the dispensing of the second material is at a temperature "80-100C" ranging between 80 degrees Celsius and 120 degrees Celsius.

To further clarify the disclosure of heating the first material to a gel state, this process is inherent in the process of curing the material because the material reaches a gel state before it reaches a final cured state.

However, Ameen does not appear to explicitly disclose the second material having a lower adhesive and adhesion property than the first material.

Notwithstanding, as cited supra, Ameen discloses a first polymeric and/or epoxy underfill material and a second polymeric and/or epoxy fillet material, and in the specification at page 8, line 19 to page 9, line 2; and the response filed on 5-23-02, page 5, second full paragraph including "Appendix A," appellant admits as prior art a

polymeric epoxy underfill material SEMICOAT 5230JP, and a polymeric epoxy fillet material SEMICOAT 122X. To further clarify the disclosure that SEMICOAT 5230JP and SEMICOAT 122X are prior art, appellant's admission that these trademarked materials were in use by another at the time of filing of the instant application is prima facie evidence that the materials are prior art. In any case, appellant has not disputed that these materials are prior art. Moreover, in the response filed on 5-23-02, appellant states, "A copy of the confirmation by Shin-Etsu Chemical Co. Ltd. Is enclosed herewith as Appendix A," wherein, at the first page, it is confirmed by Shin-Etsu that, "5230JP is underfill and 122X is fillet forming material." In addition, at the second page it is confirmed that SEMICOAT 5230JP and SEMICOAT 122X are "Liquid Epoxy Materials for Electronic Devices," that SEMICOAT 5230JP is "Exceptional good moisture resistance to prevent delamination," and that SEMICOAT 122X is "Fillet forming to reinforce crack resistance." Furthermore, it would have been obvious to use the prior art SEMICOAT 5230JP polymeric epoxy underfill material as the polymeric and/or epoxy underfill material of Ameen because, as disclosed by the prior art, it would provide exceptional moisture resistance to prevent delamination. Also, it would have been obvious to use the prior art SEMICOAT 122X polymeric epoxy fillet material as the polymeric and/or epoxy fillet material of Ameen because, as disclosed by the

prior art, it would reinforce crack resistance. In addition, as admitted by appellant in the application specification, at page 8, line 19 to page 9, line 2, the particular claimed relative adhesion property is an inherent property of the prior art materials.

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ameen and appellant's admitted prior art as applied to claim 8, *supra*, and further in combination with Desai (6166434) and Lewis (6020579).

As cited, Ameen discloses wherein the first material flows, and the substrate is within an "oven" when the first material is heated between the integrated circuit and the substrate.

However, Ameen and appellant's admitted prior art do not appear to explicitly disclose wherein the substrate moves within an oven while the first material flows between the integrated circuit and the substrate.

Nonetheless, at column 1, line 65 to column 2, line 19, Desai discloses wherein a first material 108 is heated and flows between an integrated circuit 100 and substrate 106. Moreover, it would have been obvious to combine the process of Desai with the process of Ameen and appellant's admitted prior art, because it would assist the flow process.

Also, Ameen, appellant's admitted prior art and Desai do not appear to explicitly disclose wherein the substrate moves within the oven while the first material flows.

Still, at column 8, lines 12-26; and column 9, line 56 to column 10, line 7, Lewis discloses wherein a substrate (either the "chip" or the "printed circuit board") moves within an oven 10 while a first material "underfill" is heated. In addition, it would have been obvious to combine the process of Lewis with the process of the combination of Ameen, appellant's admitted prior art and Desai, because it would facilitate the process of heating the first material in an oven.

(10) Response to Argument

Appellant argues that, "Claims 7-14 and 31-35 are not Obvious Over Ameen, In View Of Admitted Prior Art, And Further In View Of Desai and Lewis" because, "there is no suggestion or motivation to combine their teachings and that no prima facie case of obviousness has been established."

This argument is respectfully traversed because claims 7, 8, 10-14 and 31-35 do not stand rejected over Ameen in view of admitted prior art and further in view of Desai and Lewis. Furthermore, in the rejection of claim 9 over the combination of Ameen, appellant's admitted prior art, Desai and Lewis, proper motivation to combine the

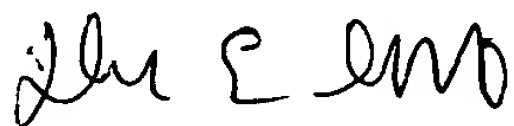
prior art is explicitly provide, and a prima facie case of obviousness is clearly established.

The remaining arguments have been fully and adequately addressed in the rejections supra.


For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

David E. Graybill



Conferees:

Olik Chaudhuri 
SUPERVISORY EXAMINER
TECHNICAL 2000

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